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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,080	04/12/2004	Jiang Hsieh	145183	3079
23413	7590	04/29/2005		
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			EXAMINER KAO, CHIH CHENG G	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/709,080

Applicant(s)

HSIEH ET AL.

Examiner

Chih-Cheng Glen Kao

Art Unit

2882



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/12/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: (fig. 2, #40) and (fig. 2, #42).

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities, which appear to be minor draft errors.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (paragraph 26, line 8, " $\square_1(t)$ "; replacing " $\square_1(t)$ " with - $\eta_1(t)$ - -) and (paragraph 26, line 9, " $\square_r(t)$ "; replacing " $\square_r(t)$ " with - $\eta_r(t)$ - -).

Appropriate correction is required.

Claim Objections

3. Claims 1, 4, 5, 7, 8, 11, 12, and 19-21 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 1, line 13, “the sets”; in the phrase “for the sets of” in line 7, replacing “the” with - -right and left- -), (claim 4, line 2, “are”; replacing “are” with - -is- -), (claim 5, line 2, “are”; replacing “are” with - -is- -), (claim 7, line 5, “the predicted flux for the right set”; in the phrase “for the sets of” in line 7 of claim 1, replacing “the” with - -right and left- -), (claim 7, line 8, “the predicted flux for the left set”; in the phrase “for the sets of” in line 7 of claim 1, replacing “the” with - -right and left- -), (claim 8, line 4, “the average actual flux for the right set”; in the phrase “for the sets of” in line 13 of claim 1, inserting - -right and left- - after “the”), (claim 8, line 8, “the average actual flux for the left set”; in the phrase “for the sets of” in line 13 of claim 1, inserting - -right and left- - after “the”), (claim 11, lines 2-3, “the measured projection”; inserting - -measured- - before “projection” in line 2 of claim 1), (claim 12, line 10, “for the sets of”; replacing “the” with - -right and left- -), (claim 12, line 15, “for the sets of”; inserting - -right and left- - after “the”), (claim 19, line 10, “for the sets of”; replacing “the” with - -right and left- -), (claim 19, line 15, “for the sets of”; inserting - -right and left- - after “the”), (claim 20, line 17, “for the sets of”; replacing “the” with - -right and left- -), (claim 20, line 22, “for the sets of”; inserting - -right and left- - after “the”),

Art Unit: 2882

(claim 21, line 13, "for the sets of"; replacing "the" with - -right and left- -), and (claim 21, line 18, "for the sets of"; inserting - -right and left- - after "the").

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9, 10, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 10, and 19 claim a reference correction value for the view being blocked. It is indefinite as to how a mathematical value can be physically blocked. This rejection may be obviated by having a reference channel blocked, instead of a reference correction value.

The Examiner has examined the claims as best understood as follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2882

5. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toth et al. (US Patent 5761257) in view of Steele et al. (US Patent 4809314) and Pfoh et al. (US Patent 5430785).

6. Regarding claims 1, 12, 19, 20, and 21, Toth et al. discloses a system (fig. 2) comprising a gantry (fig. 1, #12) having an x-ray source (fig. 2, #14) and a radiation detector array (fig. 2, #18 and 20), wherein said gantry defines an object cavity (fig. 1, #48), said x-ray source (fig. 2, #14) and said radiation detector array (fig. 2, #18 and 20) are rotatably associated (col. 3, lines 37-38) with said gantry (fig. 1, #12) so as to be separated by said object cavity (fig. 1, #48) and said detector array including a right and left edge (fig. 2, #50 and 52), an object support structure (fig. 1, #46) movably associated (fig. 2, #44) with said gantry (fig. 1, #12) so as to allow communication with said object cavity (fig. 1, #48), and a processing device with a medium encoded with a program (fig. 2, #36) for a method comprising receiving a projection dataset (col. 5, line 35-36) created by an imaging system (fig. 2, #18) in response to a varying x-ray tube current (col. 4, line 65, to col. 5, line 1) and object (col. 4, lines 49-50), the projection dataset including a view (col. 4, line 65), calculating predicted fluxes for a reference channel within the view (col. 5, lines 10-21), wherein a reference channel is located proximate at an edge of a detector array (col. 3, lines 62-67), determining correction for the view based on the predicted reference fluxes and actual fluxes, and applying the correction to the view (col. 5, lines 35-55).

However, Toth et al. does not disclose calculating average actual fluxes for applying a reference correction value and right and left reference channels.

Steele et al. teaches calculating average actual fluxes for reference channels for applying a reference correction value (col. 5, lines 38-65). Pfoh et al. teaches right and left reference channels (col. 3, lines 58-60) for applying correction (col. 4, lines 51-57).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth et al. with the averaging of Steele et al., since one would be motivated to make such a modification to better take account of fluctuations in source intensity (col. 5, lines 43-44) as implied from Steele et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth et al. with the right and left reference channels of Pfoh et al., since one would be motivated to make such a modification to reduce errors (col. 3, lines 58-65) as shown by Pfoh et al.

7. Regarding claims 2, 3, 13, 14, and 22-24, Toth et al. further teaches a computed tomography imaging system (title), which would necessarily have a wide-bore (fig. 1, #48) to allow a patient (fig. 1, #22) to fit.

8. Regarding claims 4, 5, and 15, Toth et al. further discloses right and left reference channels implemented by detector cells in the detector array (col. 3, lines 62-67, and fig. 3a).

9. Regarding claim 6, Toth et al. as modified above suggests a method as recited above.

However, Toth et al. does not disclose three reference channels in each set.

Steele et al. teaches three reference channels in each set (col. 5, lines 40-42).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the method of Toth et al. as modified above with the reference channels of Steele et al., since one would be motivated to make such a modification to better take account of fluctuations in source intensity (col. 5, lines 43-44) as implied from Steele et al.

10. Regarding claims 7 and 16, Toth et al. further discloses wherein the projection dataset further including a measured x-ray tube current (col. 5, line 19) and a conversion factor (col. 5, line 20) for a reference channel, and the predicted flux for the reference channel is calculated by multiplying the measured x-ray tube current and the conversion factor for the reference channel (col. 5, line 16).

11. Regarding claims 8 and 17, Toth et al. as modified above suggests a method as recited above.

However, Toth et al. does not disclose wherein a projection dataset includes a reference channel reading for each reference channel, an average actual flux for the right set of reference channels is calculated by taking an average of the reference channel readings in the right set, and an average actual flux for the left set of reference channels is calculated by taking an average of the reference channel readings in the left set.

Steele et al. further teaches wherein a projection dataset includes a reference channel reading for each reference channel, an average actual flux for the right set of reference channels is calculated by taking an average of the reference channel readings in the right set, and an

Art Unit: 2882

average actual flux for the left set of reference channels is calculated by taking an average of the reference channel readings in the left set (col. 5, lines 53-65).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the method of Toth et al. as modified above with the averaging of Steele et al., since one would be motivated to make such a modification to better take account of fluctuations in source intensity (col. 5, lines 43-44) as implied from Steele et al.

12. Regarding claims 9 and 18, Toth et al. further discloses correcting predicted fluxes for errors in conversion factors (col. 5, lines 25-30), setting correction for the view to the actual flux from the reference channel with the highest ratio of actual flux to predicted flux (col. 5, lines 49-55), and substituting a previous correction scaled by an x-ray tube current charge for correction of the view if the reference channel for the view is blocked (col. 5, lines 43-48).

13. Regarding claim 10, Toth et al. as modified above suggests a method as recited above.

However, Toth et al. does not specifically disclose wherein the reference channel is blocked if the ratio of the actual flux to the predicted flux is less than a selected parameter.

Toth et al. further discloses that the reference channel is blocked if the actual flux is less than the predicted flux times a selected parameter.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Toth et al. as modified above with the determination of a blocked reference channel by a ratio, which is explained with motivation as follows. The determination of a ratio of the actual flux to the predicted flux being less than a

Art Unit: 2882

selected parameter and the determination of the actual flux being less than the predicted flux time a selected parameter are art-recognized equivalents in that they both describe the same mathematical situation. It would have been within ordinary skill in the art to substitute one type of determination with the other. One would be motivated to use a ratio, to more easily determine a result with a single number, rather than comparing numbers, which may have different units.

14. Regarding claim 11, Toth et al. as modified above suggests a method as recited above.

However, Toth et al. does not disclose dividing a measured projection by a reference correction value.

Steele et al. teaches dividing a measured projection by a reference correction value (col. 5, lines 62-65).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the method of Toth et al. with the dividing of Steele et al., since one would be motivated to make such a modification to better take account of fluctuations in source intensity (col. 5, lines 43-44) as implied from Steele et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

Art Unit: 2882

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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